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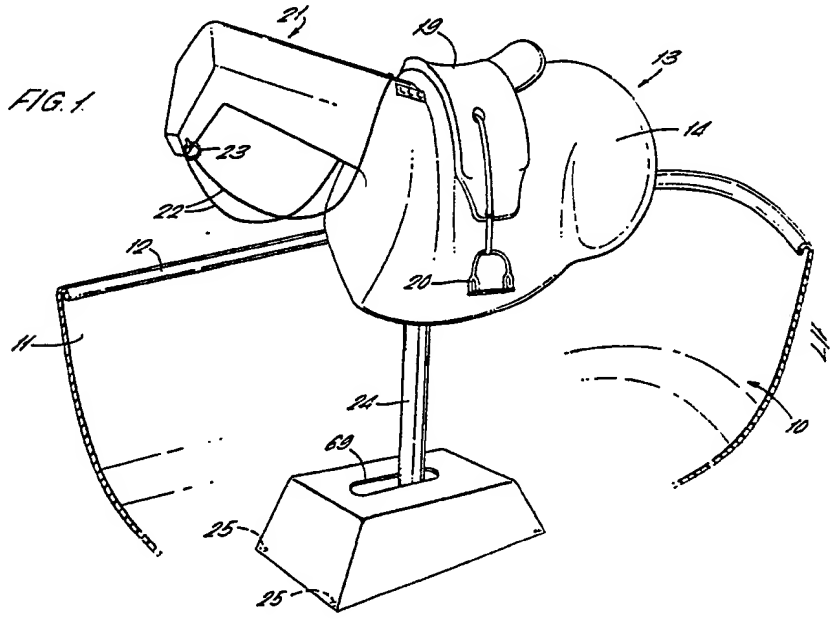
(58) Field of search
UK CL (Edition J) **A6M**
INT CL[4] **A63B, A63G**

(54) Workout horse

(57) A workout horse 13 comprises a stationary base frame, a body portion 14 on which a rider sits supported above the base frame, and interconnecting drive means for driving the body portion relative to the base frame, the drive means continuously reciprocating the body portion forwards and backwards along an intended rotary path. In a particular embodiment the rotary path simulates so far as possible the natural cantering movement of a polo pony.



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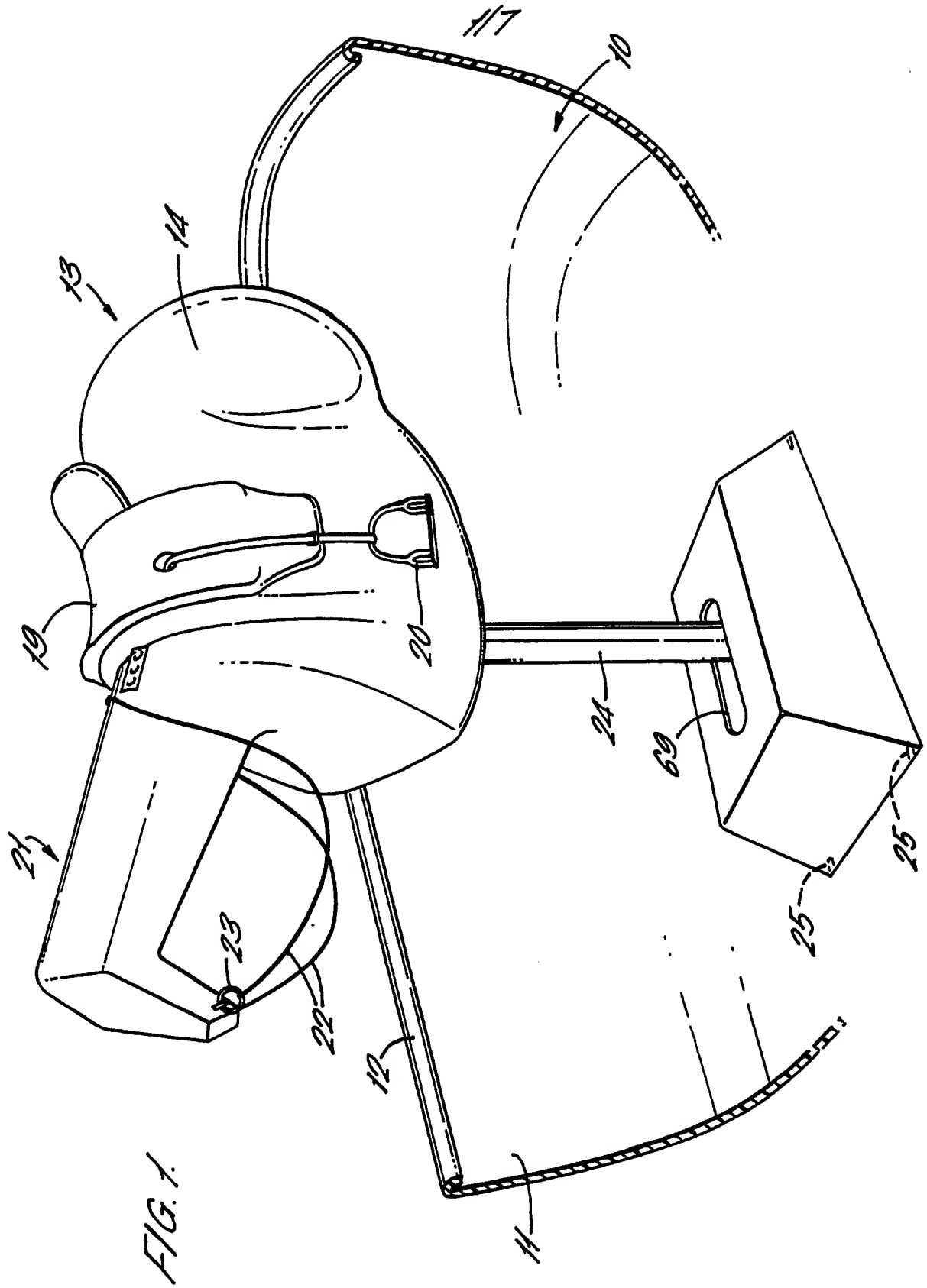

FIG. 1.

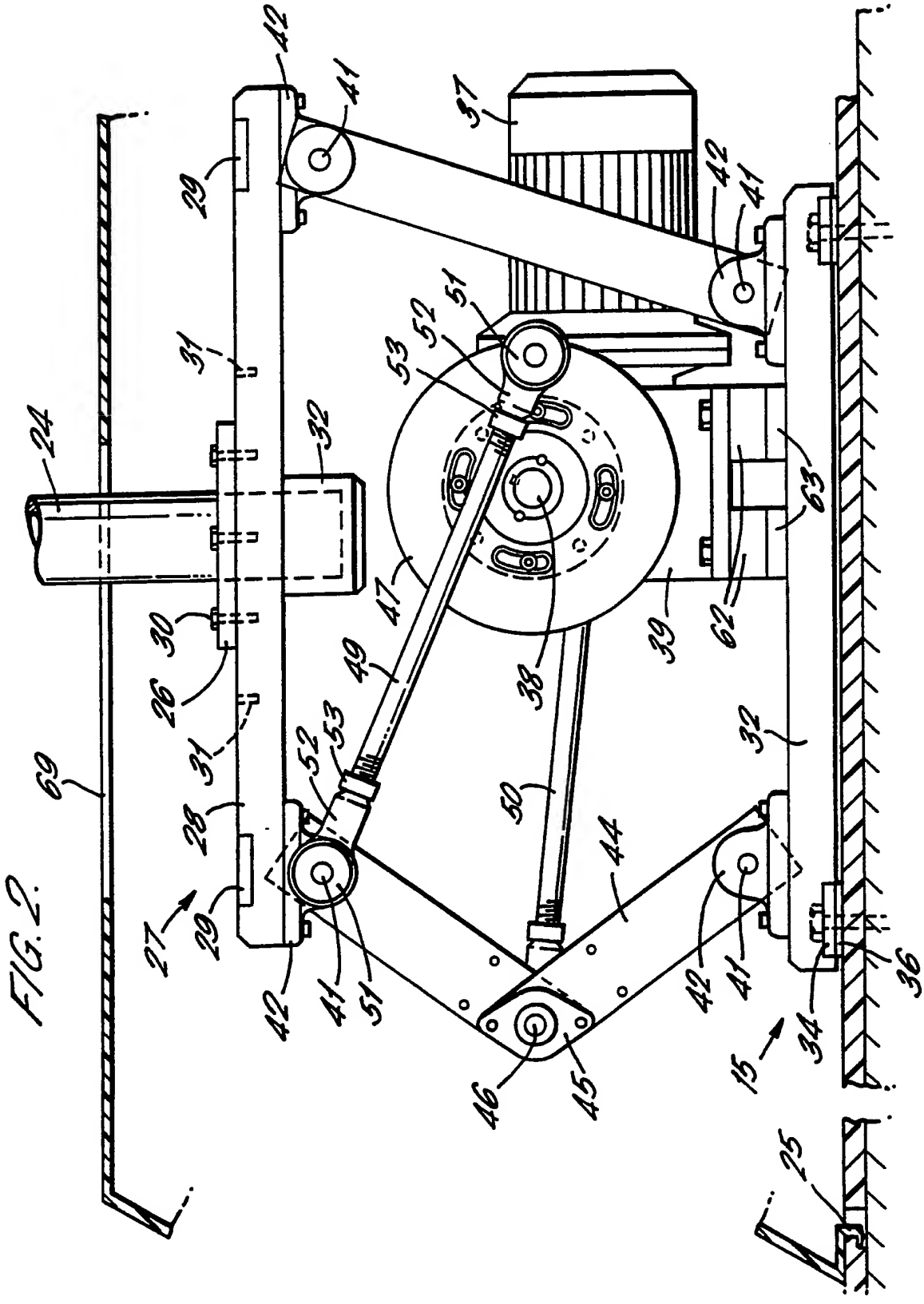
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FIG. 2.

FIG. 3.

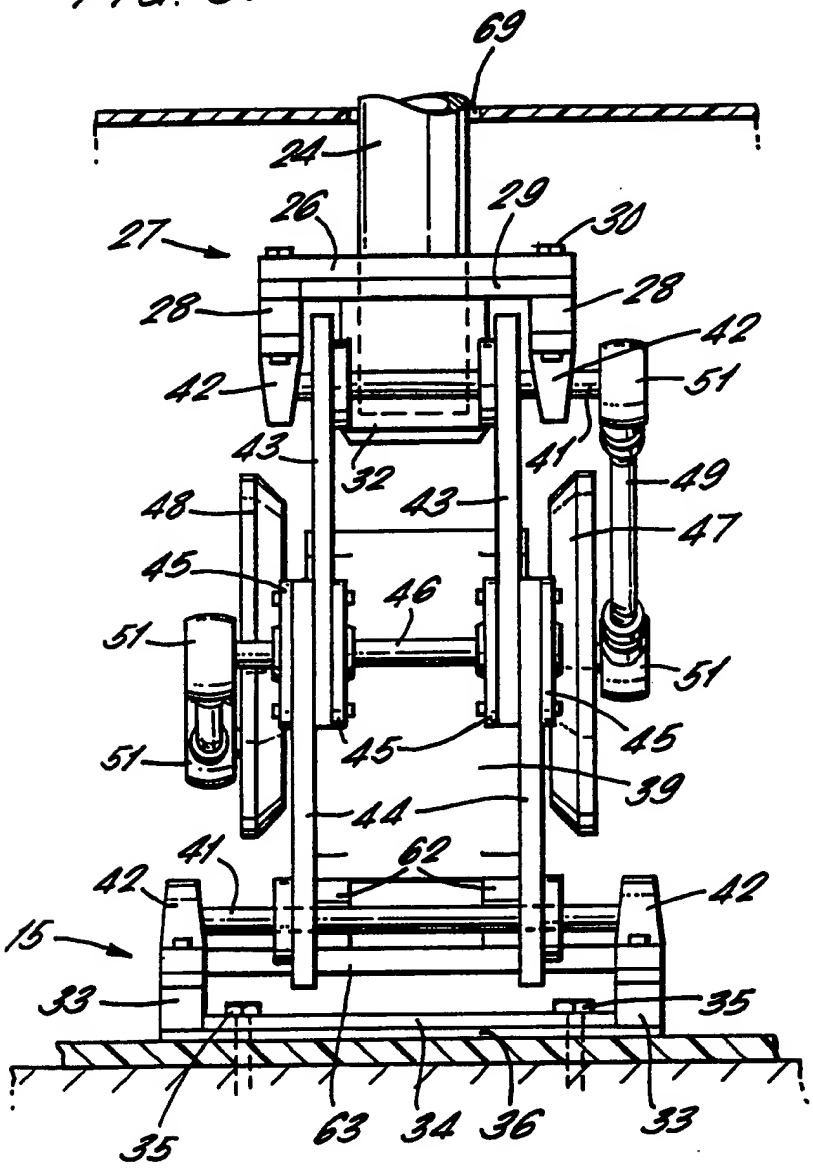
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FIG. 4.

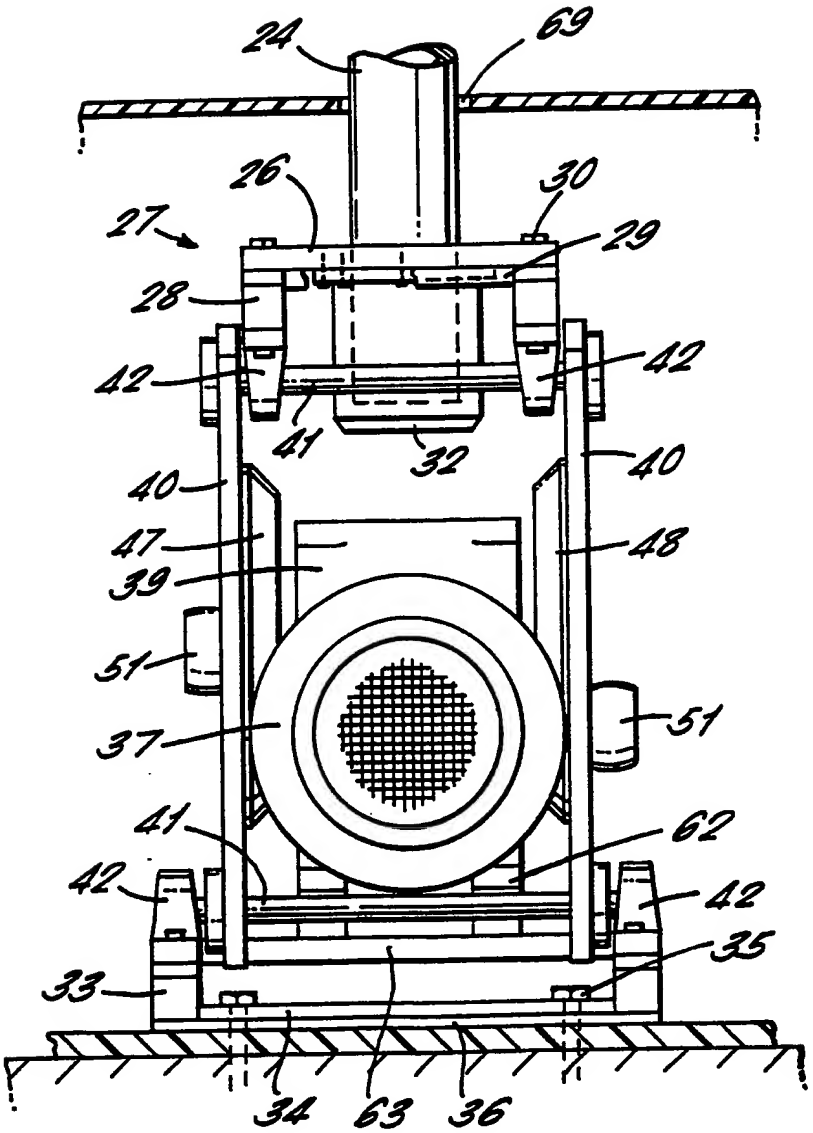
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FIG. 5.

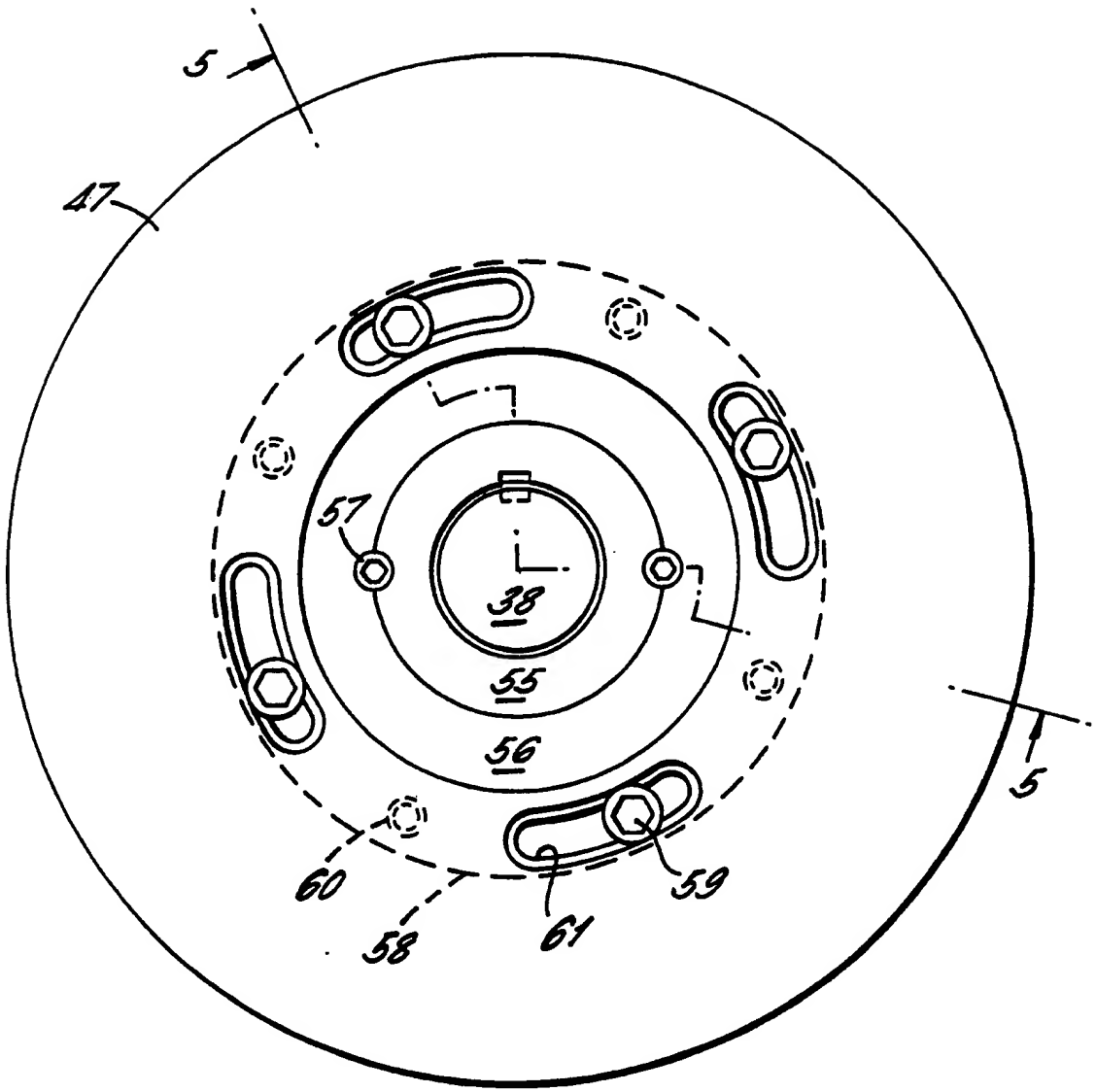


FIG. 6.

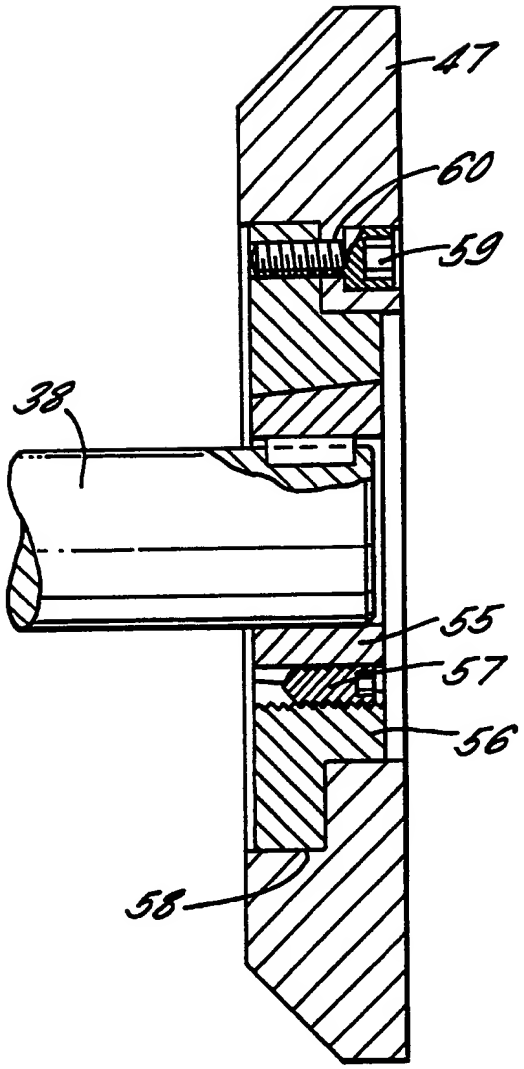
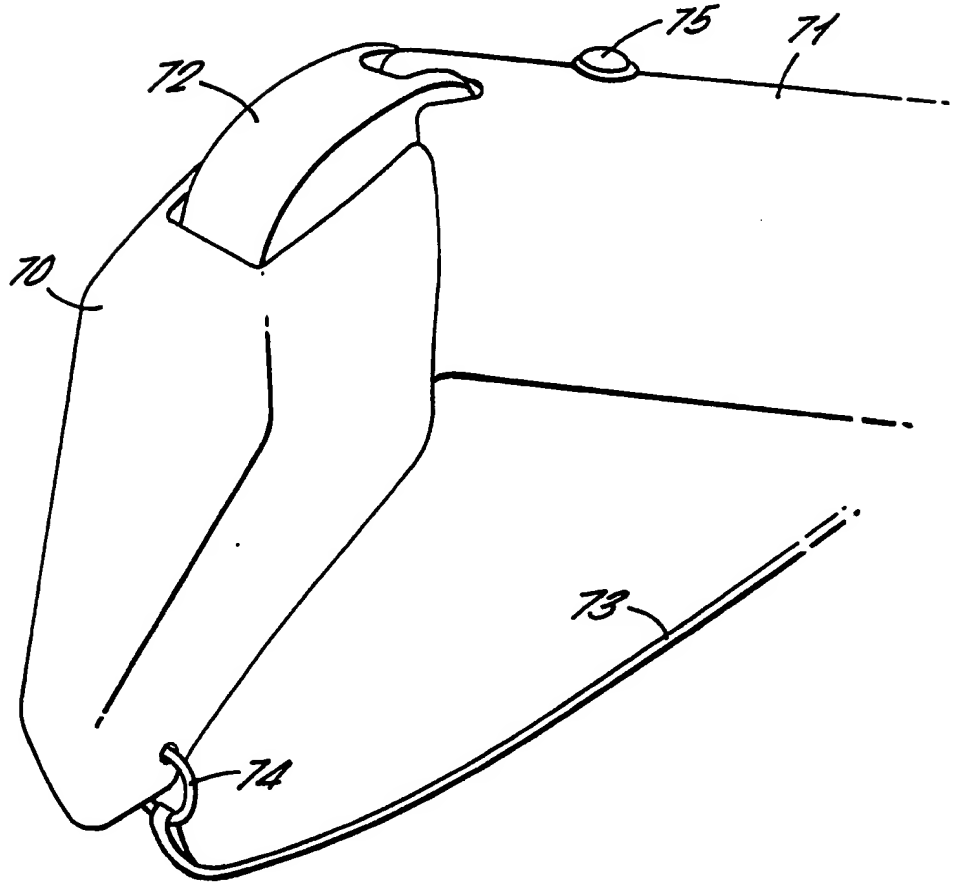


FIG. 7.

FIG. 8.



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WORKOUT HORSE

This invention relates to a workout horse. More particularly but not exclusively, the invention relates to a workout horse for use by polo players.

It is known for a polo player to workout on a static, replica of a horse, conventionally made of wood, which is positioned at the centre of a dish shaped surface so that when the polo ball is hit, the ball will remain within the confines of the surface and tend to roll back towards the player on the horse.

A mechanical bucking steer is also known. In this case the replica steer spins and is activated to provide an intermittent bucking motion.

According to the invention there is provided a workout horse comprising a stationary base frame, a body portion on which a rider sits supported above the base frame, and interconnecting drive means for driving the body portion relative to the base frame, the drive means continuously reciprocating the body portion forwards and backwards along an intended rotary path.

Preferably the drive means provides a lifting action during a part of the forward movement of each reciprocating cycle. The drive means preferably causes the body portion to simulate the natural cantering movement of a polo pony.

It is also preferred that the drive means comprises an electric motor driving a first crank wheel to effect the forward and back action and a second crank wheel to effect the lifting action. The crank wheels are preferably mounted on a single drive shaft, the initial rotary position of one of the crank wheels relative to the other crank wheel being variable.

Preferably the base frame supports an upper frame which is reciprocated by the drive means, the upper frame carrying the body portion therewith.

The body portion is preferably mounted on a support column extending upwardly from the upper frame.

Preferably the drive means are operable at different speeds.

The body portion may be a unitary item. Alternatively, the body portion may have a main portion on which the drive means are operable at different speeds.

One particular use for the workout horse according to the invention is to enable the rider to practice hitting an object, e.g. for a polo player or potential polo player to practice hitting a polo ball. For this purpose, the workout horse may be provided in combination with a known dish shaped surface on which, e.g. at its centre, the workout horse is stood or preferably fixed. The rider then sits on the horse for practicing hitting polo balls. The contour of the surface is designed to retain the balls within the confines of the surface and to return them towards the horse.

By way of example, a specific embodiment in accordance with the invention will be described with reference to the accompanying diagrammatic drawings in which:-

Figure 1 is a perspective view of a workout horse and part of a practice surface area suitable for use by a polo player;

Figure 2 is a side elevation of the drive means within the base portion of the workout horse of Figure 1;

Figure 3 is a front elevation of the drive means in relation to the head of the workout horse of

Figure 1;

Figure 4 is a rear elevation of the drive means;

Figure 5 is an enlarged side elevation of the crank wheel seen in Figure 2;

Figure 6 is a section along line 5-5 in Figure 5;

Figure 7 shows the rotary path of the body portion effected by the drive means of Figure 2; and

Figure 8 is a perspective view of part of a modified workout horse.

This example concerns a workout horse for particular use by polo players or potential polo players. As with a conventional, stationary workout horse, the horse is stood or fixed generally centrally of a dish-shaped practice surface area. A rider on the horse then practices hitting polo balls over the surface which by virtue of its contour retains the balls within the confines of the surface area and tends to return them towards the horse.

With reference to Figures 1 to 7, the practice surface area 10 is of conventional design and in this embodiment is formed of reinforced glass fibre. The surface has an upstanding peripheral rim 11 with an inwardly projecting lip 12 to retain the polo balls on the surface area, and also slopes generally towards its centre. If desired the rim could additionally have protective netting around its periphery.

The workout horse 13 is positioned, for example, at the centre of the practice surface 10. The horse comprises a body portion 14 on which the rider sits and a stationary base frame 15 which, in this embodiment, is fixed to the ground by bolts 35 (Figures 3 and 4) and protected by a cover 16 which is held in position by corner clips 25. Other fixing means for the cover 16 may be employed if desired.

Under the base portion cover 16 is a drive mechanism 17 to move the body portion 14 relative to the base frame 15 in a manner which so far as possible simulates the natural cantering movement of a polo pony.

The body portion 14 has a main portion 18 carrying a saddle 19 and stirrups 20 and, in this embodiment, an integral neck and head portion 21 with reins 22 attached to mouth bit rings 23. Also, in this embodiment, the saddle 19 is formed integrally with the main portion 18 as a moulding of reinforced glass fibres or other suitable plastics material. The base portion cover 16 is also a similar moulding.

The body portion 14 includes a metal support column 24 which at its upper end is rigidly attached to the inside of the moulded main portion 18. The lower end of the column 24 passes through an oval shaped aperture 69 in the cover 16 and is mounted on a substantially central intermediate transverse member 26 of an upper movable frame 27. The column passes through an aperture in the transverse member 26 and is attached to the transverse member by a flanged support member 32 which is bolted to the undersurface of the transverse member. Spaced apart longitudinal members 28 of the upper frame 27 are also connected by end transverse members 29. The intermediate transverse member 26 is attached to the longitudinal members 28 by bolts 30, and further threaded holes 31 are provided in the longitudinal members so that, if desired, the position of the intermediate transverse member 26 can be adjusted longitudinally of the frame 27. The upper frame 27 thereby carries the body portion 14 for movement therewith.

Both ends of the upper frame 27 are linked to respective ends of the stationary base frame 15 which

likewise has spaced apart longitudinal members 33 and end transverse members 34. The base frame 15 is fixed to the ground by the above-mentioned bolts 35 passing through holes in the transverse members 34 and rubber pads 36. Mounted on the base frame 15 is an electric motor 37 for driving the output shaft 38 of a reduction gear box 39, the shaft 38 extending transversely of the base frame. The gear box 39 is centrally bolted to the base frame 15 employing four mounting blocks 62 and two further transverse members 63.

The rear ends of the base frame 15 and the upper frame 27 are linked by two identical links 40. The ends of each link 40 are carried on shafts 41 extending between bearing blocks 42 bolted on the longitudinal members of the respective frame (Figures 2 and 4). Similarly mounted shafts 41 at the front ends of the two frames are linked by two pairs of links 43, 44 (Figures 2 and 3). Attached to the adjacent ends of each pair of links 43, 44 are face bearings 45 carried on a common shaft 46. In this embodiment, the bearing blocks 42 and face bearings 45 are R.H.P. ball race type bearings.

The upper frame 27 is thus reciprocable longitudinally of the base frame 15 and the front end of the upper frame can be moved vertically up and down relatively to the rear end of the upper frame. For effecting this movement, two crank wheels 47, 48 are mounted on the output shaft 38 of the gear box 39. The crank wheel 47 on the right-hand side as viewed in Figures 3 and 5 has a connecting rod 49 pivotally mounted at one end by an eye end ball race bearing to the crank wheel, and its other end pivotally mounted by a similar bearing on an extension of the shaft 41 at the front end of the upper frame. Screw threaded terminal blocks 52 on

the connecting rod 49 allow a degree of length adjustment which is then locked by a locking ring 53. Rotation of the crank wheel 47 will thereby effect longitudinal movement of the upper frame 27 relative to the base frame 15.

The other crank wheel 48 has a similar connecting rod 50 pivotally mounted at one end to the crank wheel, and its other end pivotally mounted on an extension of the shaft 46 interconnecting the pairs of front links 43, 44. Rotation of the crank wheel 48 will thereby effect vertical movement of at least the front end of the upper frame 27 relative to the base frame 15. Accordingly, rotation of both crank wheels 47, 48 simultaneously reciprocates the upper frame 27 and hence the body portion 14 of the horse 13 forwards and backwards along an intended rotary path. In this embodiment, the rotary path achieved is illustrated in Figure 7.

The use of twin cranks results in such an irregular rotary path, rather than a reciprocal motion with identical forward and return movements which would result from a single crank. Moreover, in this embodiment, the angular adjustment between the two crank wheels is infinitely adjustable. Similarly, the throw of each crank and the length of the respective connecting rod are adjustable either individually or in combination giving a variety of resulting motions.

As shown in Figure 2, connecting rod 49 effecting longidudinal movement of the upper frame 27 is mounted on the associated crank wheel 47 substantially at the periphery of the crank wheel, whilst the corresponding end of the other connecting rod 50 is mounted radially closer to the centre of the crank wheel 48. This has the effect of reducing the vertical movement effected by the forward links

43, 44 compared with mounting the connecting rod 50 nearer the periphery of the crank wheel 48.

The means for mounting the two crank wheels 47, 48 on the gearbox output shaft 38 are also slightly different. As shown in Figure 2, each crank wheel is keyed onto the shaft by key 54 and is locked onto the shaft by a known form of tapered housing in which concentric parts 55, 56 are expanded by rotation of grub screws 57, the radially outer part 56 having a shoulder 58 which is bolted by four bolts 59 to the crank wheel. In the case of the crank wheel 48, these four bolts are not illustrated but engage in respective threaded holes in the crank wheel, which could be mounted in any one of four alternative positions relative to the position of the respective key 54. However, in this embodiment, the four mounting bolts 59 for the other crank wheel 47 have eight alternative holes 60 in the outer part 56 of the tapered housing, and each bolt engages an arcuate slot 61 having a length equivalent to 30^{o} relative to the centre of the shaft 38. Thereby the rotary position of the crank wheel 47 relative to that of the crank wheel 48 is infinitely adjustable.

In this embodiment, the electric motor 37 is a 2.2. Kw 3 phase motor controlled by a variable speed AC drive inverter, using single phase input and giving 3 phase output with variable frequency allowing up to five preset speeds with programmable ramp up and ramp down times to give a soft start and stop characteristic. The gear box 39 also gives a reduction of 30:1.

In operation, rotation of the crank wheels 47, 48 by the motor 37 drives the connecting rods 49, 50 to effect a longitudinal/vertical movement to the upper frame 27 and thereby the body portion 14 on which the rider sits. As described above, the

intended rotary path of this reciprocating movement may be varied as desired, whilst in this embodiment it is adjusted to simulate as closely as possible the natural cantering movement of a polo pony.

Figure 8 illustrates part of a modified embodiment of workout horse which is identical to the workout horse of Figures 1 to 7 except that it has a head portion 70 which is pivotally connected to the neck portion 71. The head portion 70 may be arranged to pivot about a vertical axis or a horizontal axis. However, in this modified embodiment, the head portion 70 is able to pivot about both a vertical axis and a horizontal axis by means of the compound joint 72. Pivoting action of the head portion relative to the neck portion is controlled by the rider through the reins 73 which are attached by a single bit ring 74. Pivotal movement of the head portion 70 beyond a predetermined limit operates a pressure switch connected to switch on or to flash an indicator light 75 in the neck portion at a position which is visible to the rider. When the rider hits a ball, he has the tendency to pull on the reins. If the amount of pull is excessive, a real polo pony would tend to pull up which is obviously undesirable. The indicator light thus acts as a device for teaching the rider on the workout horse not to pull on the reins to an excessive amount when hitting a ball.

The size of the body portion 14 and the speed control means for the electric motor 34 may be readily adapted to suit a polo player of any ability or age.

Although the workout horse has been described as simulating the natural cantering movement of a polo pony. It is also envisaged that the longitudinal/vertical action of the drive means may

be altered so that the body portion simulates a different type of horse movement.

The workout horse may also be used without the practice surface area 10, if desired.

CLAIMS

1. A workout horse comprising a stationary base frame, a body portion on which a rider sits supported above the base frame, and interconnecting drive means for driving the body portion relative to the base frame, the drive means continuously reciprocating the body portion forwards and backwards along an intended rotary path.

2. A workout horse as claimed in Claim 1, wherein the drive means provides a lifting action during a part of the forward movement of each reciprocating cycle.

3. A workout horse as claimed in Claim 1 or Claim 2, wherein the drive means causes the body portion to simulate the natural cantering movement of a polo pony.

4. A workout horse as claimed in Claim 2 or Claim 3, wherein the drive means comprises an electric motor driving a first crank wheel to effect the forward and back action and a second crank wheel to effect the lifting action.

5. A workout horse as claimed in Claim 4, wherein the crank wheels are mounted on a single drive shaft, the initial rotary position of one of the crank wheels relative to the other crank wheel being variable.

6. A workout horse as claimed in any one of the preceding claims, wherein the base frame supports an

upper frame which is reciprocated by the drive means, the upper frame carrying the body portion therewith.

7. A workout horse as claimed in Claim 6, wherein the body portion is mounted on a support column extending upwardly from the upper frame.

8. A workout horse as claimed in any one of the preceding claims, wherein the drive means are operable at different speeds.

9. A workout horse as claimed in any one of the preceding claims, wherein the body portion has a main portion on which the rider sits, a neck portion integral with the main portion and a head portion pivotally mounted on the end of the neck portion, reins for pivoting the head portion, and indicator means which indicate to the rider when the head portion is pivoted beyond a predetermined limit.

10. A workout horse as claimed in any one of the preceding claims, in combination with a dish shaped surface on which the horse is fixed to enable the rider to practice hitting an object over the surface, the contour of the surface being designed to retain the objects within the confines of the surface and to return the objects towards the horse.

11. A workout horse substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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